

[C1.1]	Advanced Cell Biology	Compulsory elective module in the core area C1	4-8 CP (total) = 120 - 240 h				4-6 SWS
			Contact hours 4-6 SWS / 60-90 h	Independent study 60-150 h			
<b>Content</b>							
	<p><b>Lecture:</b> Autophagy, mitochondrial cell biology, non-membranous organelles / phase transitions, endocytosis and membrane traffic, optogenetics in cell biology, signal transduction, systems and synthetic biology, other current developments in cell biology, modern methods in cell biology.</p> <p><b>Seminar (CEM):</b> Current original literature on cell biological topics in the literature seminar is presented as a seminar talk (student groups of two or three), and discussed and evaluated in the plenum.</p> <p><b>Practical course (CEM):</b> Basic cell-biological experiments using cultivated mammalian cells. Cell culture, sterile techniques, testing for contamination (PCR, fluorescence staining of mycoplasma), transfection of cells, light microscopy, (immuno)fluorescence microscopy, staining of specific cell types, organelles or cytoskeletal elements in fixed or unfixed cells, Ca<sup>2+</sup> imaging, luciferase assay and RNAi.</p> <p>The lecture must be combined with either the seminar (CEM) or/and the practical course (CEM).</p>						
<b>Learning outcomes and skills</b>							
	After successfully completing the course, students are able to understand the basics, methods and complex relationships in cell biology and to critically evaluate current research literature. In addition, based on selected practical experiments on cultivated cells, they have learned basic methods and acquired skills so that they can apply them, for example as part of a master's thesis, in their own research project or later in their professional life.						
<b>Admissions requirements/Conditions for participation in the module/courses</b>							
	Practical course & seminar: Passed final exam						
<b>Recommended prior knowledge</b>							
	None						
<b>Organizational details</b>							
	The practical course is offered as a one-week block course during the lecture-free time (maximum of 20 students per term). A very good seminar presentation can improve the grade of the exam for the lecture by 0.3 or 0.7.						
<b>Module allocation (degree programme/faculty)</b>			Master Biochemistry / FB14				
<b>Module transferrable to other degree programmes</b>							
<b>Module offered</b>			<ul style="list-style-type: none"> <li>- Lecture: winter semester</li> <li>- Seminar: summer semester</li> <li>- Practical course: Offered each winter and summer semester during the lecture-free time</li> </ul>				
<b>Duration</b>			2 semesters				
<b>Module coordinator</b>			Prof. Gottschalk				
<b>Course requirements for credits</b>							
<b>Participation record</b>			<ul style="list-style-type: none"> <li>- Seminar: Regular and active participation</li> <li>- Practical course: Regular attendance</li> </ul>				
<b>Coursework</b>			<ul style="list-style-type: none"> <li>- Seminar: Presentation</li> <li>- Practical course: Fulfillment and protocols of the practical course experiments</li> </ul>				
<b>Forms of teaching / learning</b>			Lecture, seminar, practical course				
<b>Language teaching and instruction</b>			English				
<b>Module assessment</b>			<b>Form / duration / content, if applicable</b>				
<b>Final module assessment</b>			Written exam for the lecture (90 min.) or oral exam (45 min.)				
<b>Cumulative module assessment consisting of</b>							
<b>Composition of the module grade for cumulative module assessment</b>							
		Mode of teaching / study	Semester hours per week	Semester CP			
				1	2	3	4
	Advanced cell biology	L	2	3			
	CEM: Current topics in cell biology	S	2		3		
	CEM: Cell biology	P	2	2			
	TOTAL		4-6	5-8			